

IN THE CLAIMS

What is claimed is:

1. A surgical needle, comprising:
 - a linear body portion including:
 - 5 a proximal end section;
 - a central section; and
 - a distal end section, the distal end section having a substantially parabolic configuration for producing a substantially uniform stress profile along a length thereof.

- 10 2. The surgical needle of claim 1, wherein the distal end section has a diameter determined according to the following equation:

$$d = (((32W)/(\pi\sigma)) * (X_n))^{(1/3)}$$

where

- 15 **d** = measured diameter at location X_n ;
- W** = load normal to the needle;
- X_n** = distance from a distal-most end of the needle; and
- σ** = chosen stress restraint.

3. The surgical needle of claim 2, wherein the distal end section includes a 20 distal tip having a uniform taper.

4. The surgical needle of claim 3, wherein the distal tip has a length which is substantially equal to a diameter of the central section of the surgical needle.

5. The surgical needle of claim 1, wherein the proximal end section is configured and adapted to secure a suture thereto.

5 6. The surgical needle of claim 1, wherein the central section has at least one of a rectilinear, circular, oval, triangular, I-beam and ribbon shaped cross-sectional profile.

7. A uniform stress needle, comprising:
10 a proximal end section configured and adapted to secure a suture thereto;
a central section having a uniform transverse cross-sectional profile; and
a distal end section having a parabolic surface profile for producing a substantially uniform stress along a length thereof, the surface profile being defined by the following equation:

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$$d = (((32W)/(\pi\sigma)) * (X_n))^{(1/3)}$$

where

d = measured diameter at location X_n ;

W = load normal to the needle;

X_n = distance from a distal-most end of the needle; and

20 **σ** = chosen stress restraint.

8. The uniform stress needle of claim 7, wherein the distal end section includes a distal tip having a uniform taper.

9. The uniform stress needle of claim 8, wherein the distal tip has a length which is substantially equal to a diameter of the central section of the needle.

5 10. A surgical needle, comprising:

a body portion including:

a proximal end section;

a central section; and

a distal end section, the distal end section having a substantially parabolic

10 configuration for producing a substantially uniform stress profile along a length thereof, the distal end section including a distal tip having a uniform taper.